

REMARKS/ARGUMENTS

Claims 1-5 and 9 are pending herein. Claim 9 has been amended to address matters of form.

1. The specification was objected to in Section 2 of the Office Action. This objection is respectfully traversed.

Applicants respectfully submit that the arguments provided by the Examiner are misplaced due to the Examiner's misunderstanding of the long term jitter equations provided in the specification. First, the Examiner is respectfully requested to note that the equations provided would have been understood by one skilled in the art to be iterative based on the information provided from the packet data received. The individual iterations would have been known to proceed as follows:

$$lt_jitter^{(t=1)} = (lt_jitter^{(t=0)} * P) + abs(jitter)^{(t=0)} * (1-P)$$

$$lt_jitter^{(t=2)} = (lt_jitter^{(t=1)} * P) + abs(jitter)^{(t=1)} * (1-P)$$

$$lt_jitter^{(t=3)} = (lt_jitter^{(t=2)} * P) + abs(jitter)^{(t=2)} * (1-P)$$

$$lt_jitter^{(t=4)} = (lt_jitter^{(t=3)} * P) + abs(jitter)^{(t=3)} * (1-P)$$

$$lt_jitter^{(t=5)} = (lt_jitter^{(t=4)} * P) + abs(jitter)^{(t=4)} * (1-P)$$

$$lt_jitter^{(t=6)} = (lt_jitter^{(t=5)} * P) + abs(jitter)^{(t=5)} * (1-P)$$

It should be noted by the Examiner at this point that the initial value for $lt_jitter^{(t=0)}$ is not of any critical importance and can be a value based on a calibration file (see page 7, line 27--page 8, line 4), or can easily be 0. The derived value of lt_jitter will include at least some portion of the $abs(jitter)$ as determined by the value of P. Including this portion of $abs(jitter)$ allows a value for lt_jitter to increase or decrease based on the desired percentage of $abs(jitter)$. Obviously, if $P=0$, then lt_jitter would directly equal $abs(jitter)$, and if $P=1$, then $lt_jitter^{(t=n)}$ would directly equal $lt_jitter^{(t=n-1)}$. However, it should be noted it would have been known to one skilled in the art to select a value of P between 0 and 1 because in such circumstances a meaningful value for lt_jitter would not be derived.

Values for P between 0 and 1 determine the amount of importance given to abs(jitter) in the calculation of lt_jitter . For example, if $P = \frac{1}{2}$ then $\text{lt_jitter}^{(t=n)} = \frac{1}{2}\text{lt_jitter}^{(t=n-1)} + \frac{1}{2}\text{abs(jitter)}^{(t=n-1)}$. As disclosed in the specification on page 12, lines 11-12, P is a predetermined adaptation rate. In other words, $1-P$ is the proportion of the absolute jitter which is added to the proportion P of the current long term jitter value in order to create the new long term jitter value. If P is set at a relatively high number near 1, the abs(jitter) for an individual data packet would have very little effect on the lt_jitter requiring a large number of data packets to obtain a stable lt_jitter if the initial lt_jitter is 0 or a value substantially different from the present lt_jitter . If the value of P is set to a number significantly less than 1, the abs(jitter) has an increased effect on the value of the lt_jitter allowing the value for lt_jitter to stabilize more quickly but have more volatility.

For at least the above-identified reasons, the function and use of the equations provided in the specification would have been understood by one skilled in the art in the manner discussed above. Accordingly, reconsideration and withdrawal of the present objection is respectfully requested.

2. The objection to claim 9 is noted, but deemed moot in view of the rewritten claims submitted above.
3. Claims 1-5 and 9 were rejected under §112, first paragraph, in paragraph 5 of the Office Action. This rejection is respectfully traversed.

As discussed in further detail above, the iterative use of the equations provided in the specification would have been readily understood by one skilled in the art. One skilled in the art would have understood that the value of P would be predetermined to be a value somewhere between 0 and 1 to allow for an interrelation to occur between any previous value of lt_jitter and a value for abs(jitter) . The samples provided by the Examiner deriving equations when P is equal to 1 and P is equal to 0, result in no interrelation between the two variables provided in the equation. The Examiner failed

to properly apply reasonable values of P between 0 and 1 to achieve a meaningful result for lt_jitter . As disclosed in the specification, an appropriate adaptation rate for P would be determined prior to running the iterative sequence. This can be shown in the following example where the adaptation rate P has been set to a value of .5 and random values for $abs(jitter)$ have been entered:

$$\begin{aligned}
 5.50^{(t=1)} &= (0^{(t=0)} * .5) + abs(11)^{(t=0)} * (1-.5) \\
 7.25^{(t=2)} &= (5.50^{(t=1)} * .5) + abs(-9)^{(t=1)} * (1-.5) \\
 9.13^{(t=3)} &= (7.25^{(t=2)} * .5) + abs(-11)^{(t=2)} * (1-.5) \\
 9.06^{(t=4)} &= (9.13^{(t=3)} * .5) + abs(9)^{(t=3)} * (1-.5) \\
 10.03^{(t=5)} &= (9.06^{(t=4)} * .5) + abs(-11)^{(t=4)} * (1-.5) \\
 9.52^{(t=6)} &= (10.03^{(t=5)} * .5) + abs(9)^{(t=5)} * (1-.5)
 \end{aligned}$$

Please note that these values were chosen for demonstration purposes only and have no significance to actual jitter values.

For at least the foregoing reasons, Applicants respectfully submit that one skilled in the art would have understood the means provided in the specification based upon the provided equations. Accordingly, reconsideration and withdrawal of the present rejection are respectfully requested.

4. The rejection to claim 9 under §112, second paragraph is noted, but deemed moot in view of the rewritten claims submitted above, in which claim 9 has been amended to clarify that the apparatus comprises means for generating a jitter parameter for each intercepted packet of a sequence of stored intercepted packets.
5. Claims 1, 2 and 9 were rejected under §103(a) over Cisco in view of Scott and further in view of Bearden. This rejection is respectfully traversed.

Claim 1 recites a method of assessing speech quality transmitted via a packet based telecommunications network comprising the steps of, among others, storing a sequence of intercepted packets associated with a call, each packet containing speech data, and generating a long term average jitter parameter for the stored packet in

dependence upon the value of the jitter parameter for the stored packet and the value of jitter parameters for any proceeding stored packets, and generating a differential jitter parameter in dependence upon the jitter parameter for the stored packet and the long term average jitter parameter.

Claim 9 recites an apparatus for assessing speech quality transmitted via a packet based telecommunication network comprising, among other things, means for storing a sequence of intercepted packets associated with a call, each packet containing speech data, means for generating a long term average jitter parameter for said stored pack in dependence upon the value of said jitter parameter for said stored intercepted packet and the value of said jitter parameter for any preceding stored intercepted packets, and means for generating a differential jitter parameter in dependence upon the jitter parameter for said stored intercepted packed and the long term average jitter parameter.

Applicants respectfully submit that the invention resides in the discovery that a long term average jitter parameter is a useful parameter for generating an estimated mean opinion score for assessing speech quality transmitted via a packet based telecommunications network, when the difference between the jitter of the current packet is compared to the long term average jitter (i.e., the jitter differential).

The Examiner correctly asserts that Cisco does not include means for determining a long term average or differential jitter parameter of the extracted parameters or generating an estimated mean opinion score in dependence upon the set of parameters. As with Cisco, Bearden also relates merely to the evaluation of network performance and does not disclose or suggest the use of a jitter differential parameter, and fails to disclose or suggest that such a parameter would be a useful measure for assessing speech quality. Applicants respectfully submit that the omission of such differential jitter parameters from the documents of Cisco and Bearden point to the inventiveness of the use of such parameters for use in a method for assessing speech quality.

Scott relates to methods and systems for managing jitter. The Examiner's citation to column 3, line 66--column 4, line 4 of Scott for its apparent disclosure for improving speech quality is unfounded. Scott does not provide any disclosure or suggestion that using a jitter differential parameter would or could be usefully employed in a method of assessing speech quality. Scott clearly fails to provide any indication that a jitter differential parameter would be useful to achieve a method of assessing speech quality.

For at least the foregoing reasons, a method of assessing speech quality, as recited in claim 1 and an apparatus for assessing speech quality, as recited in claim 9 would not have been obvious given the disclosures of Cisco, Scott and Bearden. Since claim 2 depends directly from claim 1, claim 2 is also believed to be allowable over the applied prior art. Accordingly, reconsideration and withdrawal of the present rejection are respectfully requested.

6. Claims 3-5 were rejected under §103(a) over Cisco in view of Scott and Bearden and further in view of Carley. Carley is relied on in the Office Action for the alleged disclosure of determining both the maximum of the performance metric followed by a standard deviation of the maximum as well as a standard deviation of the performance metric followed by a subsequent standard deviation. Thus, the disclosure in Carley relied upon in the Office Action fails to overcome the deficiencies of Cisco, Scott and Bearden, as attempted to be applied to claim 1, from which claims 3-5 depend. Accordingly, reconsideration and withdrawal of this rejection are respectfully requested.

If the Examiner believes that contact with Applicants' attorney would be advantageous toward the disposition of this case, the Examiner is herein requested to call Applicants' attorney at the phone number noted below.

The Commissioner is hereby authorized to charge any additional fees associated with this communication or credit any overpayment to Deposit Account No. 50-1446.

Respectfully submitted,

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